Novel Method for Manufacture of High-Strength Construction Materials of Gyroidal Configuration with Higher Strength than Solid Materials via Specialized Density Amplification Process

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Introduction

Gyroidal structures are known for their high strength-to-weight ratio and have, thus far, the construction of materials built from these structures has only been possible through additive manufacturing.

Abstract

The ability to render cubic metals as a liquid at room temperature using rapidly-alternated Coulomb Force Lines (ibid.) has implications which have already been discussed by this author for the manufacturing of construction materials. The purpose of this abstract is to detail one example of how a transiently-induced liquid state can not only enhance additive manufacturing using metals (by eliminating the energy-intensive requirement of smelting) but can enable an entirely novel approach in which large blocks of tempered metals may be constructed without the use of traditional high-heat smelting.

Specifically, this abstract will focus upon the application of constructing full-weight metallic construction materials (out of steel, for example) with gyroidal variations in density but in which solid blocks of steel are used as a starting point.

While it is understood that adding carbon to iron in small quantities produces a higher-strength material known as steel, the exact reasons for this enhanced strength have not been properly investigated. At the most fundamental level, I propose that the addition of carbon molecules to iron enhances the strength of iron by providing an attractive force which enables iron to cluster together in areas of greater density in localized areas. This blend of areas of higher local density and areas of lower density make steel stronger than iron for the same reason why gyroidal structures confer strength upon a material.

Therefore, if one takes into account a newfound ability to liquefy metals at room temperature and instantaneously re-solidify them through the simple cessation of a large-scale Coulomb Force Line alternation system, it becomes quite easy to envision the use of powerful light in order to create pressure waves within large bodies of steel which generate complementary ripples of increased density including vacuous pockets.

If one were to create a large chamber in which metals could be rendered liquid at room temperature and were to add the ingredient of powerful LASER

generators (ideally helical LASERs with points of convergence in zones one wishes to make vacuous,) it would be possible to create transient pressure waves which create zones of increased and decreased density of far greater magnitude than seen in the finished product of Bessemer Steel and these variations in density could be locked in place through the controlled cessation of the CFL generators.

In this way, not only could steel be manufactured in a new way (as heating would no longer be required,) but a solid block of steel could be made 7-8x stronger through the aforementioned process applied to the material secondarily.

Conclusion

Such a material would be economical (especially considering that the base cost of making the steel would be reduced) and would be highly useful for applications which call for materials stronger than steel. Solidified materials with these *previously impossible density levels may have properties of corrosion resistance* not previously thought possible.